logic circuit 67. Should code changes or codes that characterize a particular article be used, there is a communications link between the processor in the terminal and the pass/not pass circuit in the security gate to pass the code from the terminal to the gate and then to confirm to the terminal that the article has passed the gate.

As presently contemplated, the patron and/or article identification labels are formed as a printed bar code which is scanned with a beam of light or a bar code recorded on magnetic tape which is scanned with a reading head. The labels can alternatively be implemented as a miniaturized, coded semiconductor chip transmitter, which includes a static random access memory (SRAM) to store the code, a radio frequency (RF) transmitter and a battery power supply. Such a transmitter may be activated and read by an RF semiconductor chip transmitter-receiver that feeds the received signal to a logic circuit to decode or translate the signal before it is passed to the data processor. In another embodiment the label may be implemented as a miniaturized, coded ultrasonic wave transmitter which includes a SRAM, an ultrasonic transducer, and a power supply. That circuit may be activated and read by an ultrasonic transducer and decoded by a logic circuit. The patron identification label can be, but is not necessarily the same as one of the article identification labels. If it is not the same as one of the article labels, a separate reader is supplied on terminal 10.

As with the patron/article identification labels, various types of security labels may be used within the scope of the present invention. Though conventional magnetic security labels may be used where the terminal and security gate are disposed immediately adjacent each other, other applications may be facilitated by the use of security labels having additional information and capabilities. For example, such additional information may be useful where a variety of sensor stations may be disposed throughout a facility in order to monitor the flow and location of articles within the facility.

In the most conventional embodiment the security label can be implemented as a strip of magnetic material, preferably a soft ferromagnetic material, which is coded to be in one of two states, for example, magnetized or demagnetized, sometimes referred to as sensitized or desensitized. The encoder and reader consists then of an electromagnetic transducer, which can be in the form of a coil of insulated wire.

Alternatively, the security label can be a miniature coded semiconductor assembly where the label can contain an abundance of information about the article, which can include the circulation status, patron/article identification indicia, the return due date of the article, and the nature of the article, e.g. whether it is a document, a tape cassette or a book. The semiconductor device assembly may include a SRAM, which contains the coded information that is fed to an RF transmitter-receiver, and a battery power supply. The encoder at the terminal includes a SRAM, where the code is generated by the terminal electronic data processor, a logic circuit to formulate the code for transmission to the semiconductor device assembly at the article, and an RF transmitter-receiver that activates the semiconductor device assembly and transmits to it the coded information for storage in the semiconductor device assembly SRAM.

The security gate/sensor station may be provided with a reader having the same components as the encoder at the terminal. Its operation, however, is the inverse of the encoder. The SRAM receives the coded information from the electronic data processor at the terminal via a communications link, which has been described as part of the security system depicted at FIG. 5. The reader/encoder RF transmitter activates the device assembly to transmit its coded information to the reader/encoder. The received information is decoded by the logic circuit and compared in the logic circuit to the information in the SRAM, which, as described, was received previously from the terminal via the communications link. The comparison enables the logic circuit to pass or not pass the article through the security gate. The communications link can be implemented by transmitter-receivers that are connected wither by a wire cable, a fiber optic cable, sound waves, light waves, or electromagnetic waves.

Accordingly, one of ordinary skill in the art will recognize that the invention provides significant enhancements with respect to efficiency, reliability and security. Various implementations of the invention may be constructed which utilize one or more novel features of the invention without incorporating each of the advantages provided by the present invention.

What is claimed is:

1. A self check out/check in system which includes a terminal for independently withdrawing or returning articles having duplicate article identifying indicia on opposing planar surfaces thereof, and alterable security indicia disposed on the article for indicating the circulation status of the article, the system comprising:

first and second readers disposed at spaced opposed locations on opposite sides of the article, said first and second readers being operative to substantially simultaneously read both article identifying indicia and for generating first and second article identifying signals in response thereto;

processing circuitry in electrical communication with said first and second readers, said processing circuitry including comparator circuitry for receiving said first and second article identifying signals and for generating a third signal when said first and second article identifying signals are substantially identical; and

security indicia control circuitry for altering the security indicia in response to said third signal.

2. The system as recited in claim 1 further comprising user identification circuitry for receiving a user identification card having user identifying indicia disposed thereon, and for generating user identification signal in response thereto.

3. The system as recited in claim 2 wherein said user identification circuitry includes a third reader operative to read the user identification indicia and to generate a fourth signal in response thereto.

4. The system as recited in claim 1 wherein the processing circuitry further comprises user verification circuitry for verifying the status of the identified user.

5. The system as recited in claim 4 wherein said processing circuitry further comprises a first memory circuit for receiving and updating information indicative of the status of a plurality of users.

6. The system as recited in claim 4 wherein said processing circuitry further comprises a memory circuit for receiving and updating information concerning the circulation status of a plurality of articles.

7. The system as recited in claim 4 wherein said processing circuitry further includes patron status enable